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09/418,161	10/13/1999	DA-HAI DING	2204/193	8490

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EXAMINER
SHAH, CHIRAG G

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 12/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*13 October 1999*</u> .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

  If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____ .

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
    application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

  a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5) ☐ Notice of Informal Patent Application (PTO-152)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .   6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United
> States before the invention thereof by the applicant for patent, or on an international application by another who
> has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention
> thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999

(AIPA) do not apply to the examination of this application as the application being examined

was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C.

122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment

by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2.   Claims 1-7 and 36 rejected under 35 U.S.C. 102(e) as being anticipated by Araujo (U.S.

Patent No. 6,097,720).

Referring to claims 1, Araujo discloses in column 2, lines 21 to 62 and column 3 lines 14

to 42 and lines 55-67 claims 1-3, figures 1 and 9-11 and respective portions of the specification

of a method for forwarding multicast packets by a (intermediate) module in a communication

system having a plurality of cooperating modules, each module including at least one network

interface for supporting directly connected multicast devices and an inter-module communication

interface for communication with remote modules, the method comprising, determining that a

remote module is associated with a multicast stream; receiving a multicast packet associated with

the multicast stream form a network interface and forwarding the multicast packet to the remote

module over the inter-module interface; and forwarding the multicast packet to the remote

module over the inter-module communication interface.

Referring to claim 2, Araujo discloses in claims 1-3 and figure 10 and respective portions

of the specification the method further illustrates determining that the remote module is

associated with the multicast stream further comprises of receiving an IGMP message from the

remote module over the inter-module communication device.

Referring to claims 3-7, Araujo discloses in claims 1-3 and column 6 lines 35 to column

7 line 16, of a method of maintaining a forwarding interface list (via multicast management

module) indicating all network interfaces and remote modules that are associated with the

multicast stream; determining that the multicast stream is supporting on at least one network

interface of the remote modules; and adding the remote module to the forwarding interface list

upon determining that the multicast stream is supported on at least one network interface of the

remote module. This enables removing network devices or module from the forwarding

interface list when a device or a remote module is not a cooperating module and having to

reconfigure the module to be in a stand-alone mode and having to go through the process of

IGMP report message in order to rejoin the membership. Araujo further discloses in figures 10

and 11 and respective portions of the specification in columns 11 and 12 of receiving a multicast

packet associated with the multicast stream from the remote module over the inter-module

communication interface and forwarding the multicast packet to the network interface (end

device); further comprising receiving an IGMP message form the network interface and

forwarding the IGMP message to all remote modules over the inter-module communication

interface as claims.

Referring to claims 36, Araujo discloses in column 2, lines 21 to 62 and column 3 lines

14 to 42 and lines 55-67 claims 1-3, figures 1 and 9-11 and respective portions of the

specification of a method for forwarding multicast packets by a (intermediate) module in a

communication system, where each module includes at least one network interface for

supporting directly connected multicast devices and an inter-module communication interface for

communicating with remote modules, wherein each module is operably coupled to forward

IGMP messages received from the at least one network interface to all remote modules over the

inter-module communication interface, determine all remote modules that are associated with a

multicast stream based upon IGMP message received from the remote modules, and forwards

multicast packets received from the at least one network interface to all remote modules that are

associated with the multicast stream.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   Claims 8-10, 23-25, and 31-33 rejected under 35 U.S.C. 103(a) as being unpatentable

over Araujo in view of Donahue (U.S. Patent No. 6,411,616).

Referring to claims 8, 23, and 31, Araujo discloses in column 2, lines 21 to 62 and column 3 lines 14 to 42 and lines 55-67 claims 1-3, figures 1 and 9-11 and respective portions of the specification of a method for sending IGMP messages by a device in a communication system and the method comprising receiving a first IGMP message including a multicast device address. Araujo fails to explicitly disclose of sending a second IGMP message using the multicast device address from the first IGMP message. Donahue teaches a method of multicasting digital data and discloses in column 36 of sending a second IGMP message using the multicast device (Access Switch/Router) address from the first IGMP message. Therefore, it would have been obvious to one of ordinary skill in the are to modify the teachings of Araujo to include the teachings of Donahue in order to determine based on reports and queries to which multicast addresses are currently joined in the membership to further minimize introducing additional traffic burden on the network.

Referring to claims 9, 10, 24, 25, 32, and 33, Araujo teaches of that the multicast device address is a multicast host and router address. Araujo fails to teach that the second IGMP message is an IGMP report message and an IGMP query message respectively. Donahue teaches a method of multicasting digital data and discloses in column 36 that the multicast device address is a multicast host and router addresses. Thus, the second IGMP message is an IGMP report message and an IGMP query respectively. Therefore, it would have been obvious to one of ordinary skill in the are to modify the teachings of Araujo to include the teachings of Donahue in order to determine based on reports and queries to which multicast addresses are currently joined in the membership to further minimize introducing additional traffic burden on the network as before.

5.   Claims 11, 12, 26, 27, 34 and 35 rejected under 35 U.S.C. 103(a) as being unpatentable

over Araujo (U.S. Patent No. 6,097,720) in view of Kobayashi (U.S. Patent No. 6,457,059).

Referring to claims 11, 26, and 34, Araujo discloses in column 2, lines 21 to 62 and

column 3 lines 14 to 42 and lines 55-67 claims 1-3, figures 1 and 9-11 and respective portions of

the specification of a method for sending IGMP messages by a device in a communication

system, the device including an interface and the method comprising receiving and sending a

plurality of IGMP messages over the interface. Araujo fails to explicitly teach that each IGMP

message received over the interface is one of an IGMP version 1 message and an IGMP version

2 messages. Araujo further fails to teach sending an IGMP version 1 message over the interface

if at least one of the pluralities of IGMP messages received over the interface is an IGMP version

1 message. Kobayashi teaches a method for transmitting multicast data in a switched LAN

environment. Kobayashi discloses in figures 9 and 10 of IGMP versions 1 and 2 respectively.

Kobayashi discloses that according to RFC1112 that IGMPv2 supports compatibility with

IGMPv1. Thus each IGMP message received over the interface is one of an IGMPv1 and an

IGMPv2 and sending an IGMPv1 message over the interface received over the interface is an

IGMPv1 message. Therefore, it would have been obvious to one skilled in the art in

implementing Kobayashi's disclosure of RFC 1112 into Araujo's invention in order to allow

upgrading and sending IGMPv2, to have access to an additional function of version 2 such as the

max response time that indicates a temporary time for transmitting a first piece of report for each

multicast address among reports received from each port to the multicast router.

Referring to claims 12, 27, and 35, Araujo fails to teach of sending an IGMP version 2

messages over the interface if and only if each of the plurality of IGMP messages received over

the interface is an IGMP version 2 messages. Kobayashi discloses in column 2 that IGMPv2

supports compatibility with IGMPv1, however IGMPv2 is not backwards compatible with

IGMPv1. Thus, if IGMP version 2 messages are sent, only IGMP version 2 may be received.

Therefore, it would have been obvious to one skilled in the art to implement the RFC2236 and

RFC1112 as referred to by Kobayashi in order to properly send and receive compatible IGMP

messages over the interface for report multicast group memberships to adjacent multicast

devices.

6.   Claims 13-22 and 28-30 rejected under 35 U.S.C. 103(a) as being unpatentable over

Araujo in view of Barkai (U.S. Patent No. 6188691).

Referring to claims 13 and 28-30, Araujo discloses in column 2, lines 21 to 62 and

column 3 lines 14 to 42 and lines 55-67 claims 1-3, figures 1 and 9-11 and respective portions of

the specification of a method for forwarding multicast packets by a (intermediate) module in a

communication system having a plurality of cooperating modules, the module comprises at least

one network interface for supporting directly connected multicast devices; and an inter-module

communication interface for communicating with remote modules. Araujo fails to teach of

including a switching logic operably coupled to receive a first multicast packet from a network

interface, determine a first multicast packet to all remote modules that are associated with the

first multicast stream over the inter-module communication interface. Araujo also fails to

specifically teach of a snooping logic programmed to determine that the remote module supports

a multicast stream based upon the IGMP messages received IGMP messages and thus the

snooping logic is programmed to add the remote module to a forwarding interface list that indicates all network interfaces and remote modules associated with the multicast stream over the inter-module communication interface.   Barkai discloses in column 5 lines 50 to column 6 line 60 of a session layer VLAN, the NMS uses the VLAN to declare the session VLAN that is able to perform administrative, IGMP snooping, GARP or other registration protocol. Thus, including such an IGMP snooping determines network interfaces and remote modules associated with multicast stream. Therefore, it would have been obvious to one skilled in the art to modify Araujo's invention to include the teachings of Barkai in order to reduce traffic congestion by determining network interfaces and remote modules associated with a multicast stream.

Referring to claims 14-17, Araujo teaches in claims 1-3 and column 6 lines 35 to column 7 line 16, of a method of maintaining forwarding interface list (via multicast management module) indicating all remote modules that are associated with the first multicast stream. Araujo fails to teach to teach of a switching logic operably coupled to forward the first multicast packet to all remote modules that are indicated in the forwarding interface list. Araujo also fails to discloses that a snooping logic is operably coupled to determine route modules associated with first multicast stream based upon IGMP messages received from the remote modules and to receive an IGMP message from a remote module and add the remote module to a forwarding interface list. As pointed out before, Barkai discloses in column 5 lines 50 to column 6 line 60 of a session layer VLAN, the NMS uses the VLAN to declare the session VLAN that is able to perform administrative, IGMP snooping, GARP or other registration protocol. Furthermore, VLAN can also create, remove and add modules or ports to a forwarding list via NMS. Therefore, it would have been obvious to one skilled in the art to modify Araujo's invention to

include the teachings of Barkai in order to reduce traffic congestion by determining network

interfaces and remote modules associated with a multicast stream.

Referring to claims 18-22, Araujo teaches in claims 1-3 and column 6 lines 35 to column

7 line 16, of a method of maintaining forwarding interface list (via multicast management

module). Araujo discloses in figure 1 of multiple remote modules. Thus, a second multicast

stream for the multicast packet is forwarded to all network interfaces that are associated with the

second multicast stream or IGMP membership group over the inter-module communication

system. Araujo fails to teach of the switching logic coupled to the multicast packet and a

snooping logic operabley coupled to determine network interfaces that are associated with the

second multicast stream based on IGMP messages received from the network interfaces and to

receive an IGMP message from a network interface and add the network interface to a

forwarding interface list. As pointed out twice before, Barkai discloses in column 5 lines 50 to

column 6 line 60 of a session layer VLAN, the NMS uses the VLAN to declare the session

VLAN that is able to perform administrative, IGMP snooping, GARP or other registration

protocol. Furthermore, VLAN can also create, remove and add modules or ports to a forwarding

list via NMS. Therefore, it would have been obvious to one skilled in the art to modify Araujo's

invention to include the teachings of Barkai in order to reduce traffic congestion by determining

network interfaces and remote modules associated with a multicast stream.

Conclusion

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 305-3988, (for formal communications intended for entry)

Or:

(703) 305-3988 (for informal or draft communications, please label "Proposed" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G Shah whose telephone number is 703-305-5639. The examiner can normally be reached on M-F 7:30 to 4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 301-305-4366. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

cgs
November 23, 2002